

occurred on the Port Stanley branch of the Grand Trunk railroad, causing delay of trains.

Galena, Jo Daviess county, Illinois.—A heavy rain storm occurred in this vicinity during the 4th and 5th. Several bridges were washed away, and the roads between this place and Sinsinawa Mound, were ruined in many places. The crops suffered great damage.

Cairo, Illinois.—Some of the farms near the Mississippi river, in this vicinity, that were overflowed by the June rise, remained under water until about the 10th of July. Farms located near the Mississippi, in the northern part of this (Alexander) county, that are seldom overflowed, sustained damage to crops estimated at \$10,000, by this overflow.

Ionia, Ionia county, Michigan.—Great damage was caused by floods along Grand river on the 5th; hundreds of acres of corn and grain were destroyed. A second overflow, causing additional damage, occurred on the 22d.

London, Ontario.—A very heavy rain storm prevailed at this place from 6 p. m. of the 10th until 3 a. m. of the 11th. The Thames river overflowed its banks and flooded the entire western suburbs of the city, compelling about 2,000 persons to leave their homes. All of the bridges across the river were destroyed. The area of the storm did not exceed twenty miles. About twenty persons were drowned, and property valued at \$500,000 was destroyed. (See extract from "Canadian Weather Review" relative to this storm, under "notes and extracts.")

Harrisonburg, Rockingham county, Virginia.—A destructive freshet occurred at this place during the evening of the 12th. Black's run, a small stream running through this place, overflowed its banks and flooded a number of dwellings. Shocks of wheat from the neighboring fields, fences, small buildings, and other property were carried away.

Springfield, Windsor county, Vermont.—The heavy rains in this vicinity on the 12th caused damage estimated at \$50,000. Buildings, bridges, and other property were washed away.

Exeter, Barry county, Missouri.—The heavy rain storm of the 14th caused a large amount of damage in this and the adjoining counties. The streams rose to greater heights than during the floods of 1844.

Easton, Pennsylvania.—The roads throughout Northampton county were badly washed by the heavy rains of the 15th. The track of the Lehigh valley railroad, between this place and Bethlehem, was blockaded by land-slides, and the Eastern and Amboy railroad was covered with two feet of water between PETERSBURG and PHILIPSBURG.

Lansing, Michigan.—More than four inches of rain fell at this place during the storm of the 21st and 22d, which is the heaviest precipitation ever recorded here. Much damage was done in this city by flooding cellars and basements. The hay and grain crops in this locality were also injured.

The following communication relating to this storm has been received from Dr. Henry S. Baker, Secretary of the Michigan State Board of Health, and Director of the Michigan Weather Service:

Gen. W. B. Hazen, Chief Signal Officer of the Army, Washington, D. C.

DEAR SIR: Since writing you relative to the storm of Saturday, July 21, I have secured information concerning a "tidal wave," which seems connected with that storm, and of which the particulars are somewhat as follows:

About 6 o'clock on Saturday, July 21, gentlemen were standing on the beach at a summer resort called Harbor Point, at the point which runs out into Little Traverse Bay, their conversation being relative to the high water of this year. They were looking at a stump which they knew the year before was entirely above water, when the water began to recede, and according to some of the gentlemen present, it receded about twenty feet down the beach. In about a minute and one-half, some think it may have been five, or even ten minutes, it began to rise again and was soon four feet higher than ever known before. This movement of the water was attended by no disturbance of the water, nothing like a wave or billow. My theory is that the water was pushed ahead of the storm, and that this wave was from that storm and extended into the bay, and that the locality was north of the northern edge of the storm, as it sprinkled a little some time before the wave.

Very respectfully,

HENRY B. BAKER, Secretary.

Fond du Lac, Fond du Lac county, Wisconsin, 21-23d.—The recent heavy rains have overflowed the streams and ravines in

this vicinity. Several streets in this city were covered with water, causing a large amount of damage to various kinds of property. About three hundred feet of the road-bed of the Fond du Lac, Amboy, and Peoria railroad were washed away, near Theresa, in Dodge county. The whole country between this place and Milwaukee was covered with water, and the crops were nearly ruined.

Milwaukee, Wisconsin.—On the 23d the Milwaukee river rose to a height more than four feet above the danger-line, floating away lumber and flooding many stores. Washouts occurred on the various railroads in this state.

Manitowoc, Manitowoc county, Wisconsin.—The heavy rains of the 21st and 22d caused the river at this place to rise to a greater height than has ever been known. Three mill dams and several saw mills have been carried away. Crops were severely injured by the excessive rains.

Salt Lake City, Utah.—During the afternoon of the 29th a destructive flood occurred in the Kanab cañon, in southern Utah. All of the wheat in the upper settlements was washed away, and a number of cattle were drowned. Many wagons and agricultural implements were lost.

LOW TIDES.

Indianola, Texas, 10th, 11th, 17th, 18th, 19th, 25th to 29th.

TEMPERATURE OF WATER.

The temperature of water as observed in rivers and harbors at the Signal-Service stations, during July, 1883, with the average depth at which the observations were made, are given in the table below. Monthly ranges exceeding 14° occurred as follows: Duluth, Minnesota, 19° 8; Provincetown, Massachusetts, 19°; Marquette, Michigan, 14° 5. The smallest monthly ranges are: 2° 1 at Sandy Hook, New Jersey; 2° 7 at Portland, Oregon; 3° 5 at Wilmington, North Carolina; 3° 6 at Portland, Maine; 4° at Galveston, Texas. The highest water temperature recorded during the month, 93°, occurred at Jacksonville, Florida, on the 18th; the lowest, 43° 3, occurred at Duluth, Minnesota, on the 29th.

Temperature of Water for July, 1883.

STATION.	Temperature at bottom.		Range.	Average depth, feet and inches.	Mean temperature of the air at station.
	Max.	Min.			
Atlantic City, New Jersey.....	75.6	67.6	8.0	ft. 3 in.	73.0
Alpena, Michigan.....	68.7	62.0	5.0	12 7	63.2
Augusta, Georgia.....	91.0	83.0	8.0	5 1	85.4
Baltimore, Maryland.....	82.0	77.0	5.0	9 10	79.6
Block Island, Rhode Island.....	72.4	62.5	9.9	8 6	67.3
Boston, Massachusetts.....	67.4	61.5	5.9	20 7	64.5
Buffalo, New York.....	74.5	67.2	7.3	10 10	70.8
Cedar Keys, Florida.....	91.9	79.5	12.4	11 2	85.7
Charleston, South Carolina.....	87.6	80.2	7.4	40 5	83.4
Chicago, Illinois.....	66.0	53.2	12.8	7 11	71.0
Chincoteague, Virginia.....	85.0	71.0	14.0	5 9	74.9
Cleveland, Ohio.....	74.1	72.0	2.1	14 0	70.7
Detroit, Michigan.....	71.0	66.0	5.0	23 5	71.0
Delaware Breakwater, Delaware.....	75.1	67.3	7.8	9 3	73.6
Duluth, Minnesota.....	63.1	43.3	19.8	14 8	66.0
Eastport, Maine.....	47.7	43.7	4.0	16 4	66.2
Escanaba, Michigan.....	67.0	53.5	13.5	15 0	63.8
Fort Macon, North Carolina.....	85.0	78.0	7.0	12 3	79.8
Galveston, Texas.....	86.0	82.0	4.0	12 6	83.9
Grand Haven, Michigan.....	77.6	69.8	7.8	19 0	67.8
Indianola, Texas.....	88.7	81.5	7.2	7 11	82.5
Jacksonville, Florida.....	93.0	86.5	6.5	18 0	84.1
Key West, Florida.....	89.6	85.0	4.6	16 11	84.8
MacKinnaw City, Michigan.....	65.0	55.8	9.2	13 0	62.5
Marquette, Michigan.....	58.5	44.0	14.5	9 10	62.0
Milwaukee, Wisconsin.....	82.4	48.7	13.7	8 0	67.6
Mobile, Alabama.....	89.2	84.3	4.9	16 6	83.6
New Haven, Connecticut.....	77.9	67.2	10.7	15 3	71.1
New London, Connecticut.....	70.0	62.0	8.0	12 11	71.2
New York City.....	76.5	71.0	5.5	17 5	73.3
Norfolk, Virginia.....	84.0	79.2	4.8	16 10	79.0
Pensacola, Florida.....	84.3	79.4	4.9	17 1	79.1
Portland, Maine.....	62.8	59.0	3.8	18 10	60.8
Portland, Oregon.....	67.8	65.1	2.7	62 10	66.9
Provincetown, Massachusetts.....	73.0	54.0	19.0	12 9	64.8
Sandy Hook, New Jersey.....	72.1	70.0	2.1	1 6	71.8
San Francisco, California.....	62.4	57.5	4.9	30 6	58.8
Savannah, Georgia.....	87.8	83.8	4.0	11 2	82.4
Smithville, North Carolina.....	67.0	61.0	6.0	10 0	61.5
Toledo, Ohio.....	80.7	69.7	11.0	11 7	73.5
Wilmington, North Carolina.....	86.0	82.5	3.5	20 6	81.5

* No record from 1st to 10th.